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a solid state, high repetition rate pulsed driver operable on plasma initiation at the base of said column for delivering a high voltage pulse across said electrodes, the plasma expanding from the base end of the column and off the exit end thereof.

REMARKS

The Examiner objected to the abstract as being too long. The abstract has therefore been rewritten to comply with current procedures.

The Examiner has also made final the restriction requirement with respect to claim 24. While the Applicant acknowledges that the simulated RF source of this claim is suitable for use in applications in addition to the plasma gun of the remaining claims, since all of the limitations of claim 24 appear in at least dependent claim 3, a complete search on claim 3 should included the same class(es) as required for a search on claim 24. Therefore, claim 24 remaining in the application should not place an undue burden on the Examiner and it is therefore respectfully requested, in accordance with MPEP §803, that this claim be permitted to remain in the application.

The Examiner has also rejected claims 1, 2, and 10-13 under the judicially created doctrine of obviousness type double patenting as being unpatentable over claims 1-25 of the Applicants parent U.S. Patent No. 6,084,198. In making this rejection the Examiner states "Solid state RF sources are commonplace and thus the claim language patented in 6,084,198 is seen as including such, but at the very least the addition of such would be an obvious feature to one of ordinary skill in the art at the time the invention was made." However, as is indicated starting at the bottom of page 21 of the specification, while prior art high voltage, high frequency RF sources such as magnetrons, klystrons or RF amplifiers could be utilized in the application, such sources are expensive both to purchase and use, are bulky and produce significant heat, which adds to the heat management burden of the system. A solid state simulated RF generator capable of operating at high voltage and frequency did not in fact previously exist and such a source is in fact one of the major inventive contributions of this application.

Therefore, since a high voltage, high frequency simulated RF source suitable for use in a plasma gun application did not exist at the time the invention was made, and in particular did not exist at the time that the parent patent was filed, the use of such a solid state simulated RF source as the RF source in the device shown in U.S. Patent 6,084,198 (the '198 patent) would not in fact

have been obvious to one skilled in the art at the time the invention was made or at the time this application was filed. Claim 1 has been amended to make clear that the solid state simulated RF source is a high voltage source operating at a frequency in the range of 10 MHz to 1000 MHz, such a simulated RF source not having existed prior to the invention thereof by the applicant. It is therefore respectfully requested that the rejection of claim 1 on the basis of obviousness be withdrawn.

Rejected claims 10-13 are all dependent on claim 1 and, incorporated all of the limitations of claim 1, are allowable at least for the reasons discussed above with respect to this claim. Further, claims 10-12 relate to the electrode structure shown for example in Figs. 8a and 8b. While an insulator was required and was present between the center and outer electrodes for the parent patent, initiator electrodes were not provided in this insulator and other initiator mechanisms were provided. One such mechanism are the sparkplug like devices 88 which are not affixed to the base insulator. Therefore, this structure is not inherent in the devices of the parent patents and there is no evidence that such a initiator structure would be obvious in view of the prior art. The structure of claim 12, which is shown in Fig. 8a, is particularly advantageous in that it permits initiation to be accomplished without requiring electrodes or wires to be introduced into the cavity area, thereby facilitating the sealing of the cavity. Again, there is nothing either inherent or obvious in this structure based on what is shown in the parent patents.

Claim 13 relates to a sintered powder refractory metal being used for at least one of the electrodes. While an electrode of such material may not be per se novel as claimed by the Examiner, it is novel in this application and provides unexpected results in that the porous refractory metal matrix can be impregnated with the material to be supplied for generating radiation at the desired wavelength, providing a novel and improved mechanism for delivering such material (see page 17, lines 19-30). There is absolutely nothing in the parent patents or, to the best of Applicants knowledge, otherwise in the prior art, which in any way either shows or suggests the advantages of using a sintered metal for an electrode in a plasma gun application and claim 13 is therefore patentable for this additional reason.

Finally, the Examiner has rejected claims 21-23, 25 and 29 under the judicially created Doctrine of Obviousness-Type Double Patenting in view of parent Patent No. 5,866,891. Claim 21 relates to the Figs. 8a, 8b embodiments and is basically an independent claim version of dependent claim 10. Claims 22 and 23 are the same as claims 11 and 12. These claims therefore

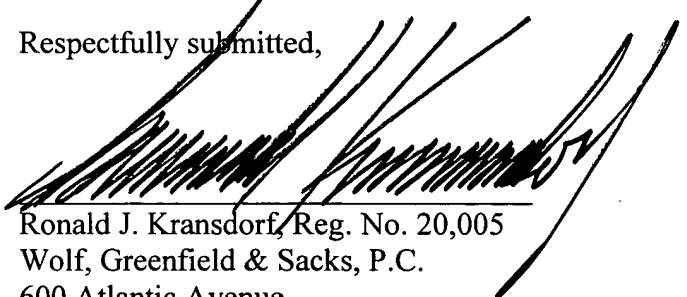
distinguish over both of the parent patents for the reasons discussed in conjunction with claims 10-12. In particular, initiator electrodes affixed to the insulator between the inner and outer electrodes of the cavity is neither shown nor in any way suggested by the parent patents or by any other reference known to the Applicant and would not have been obvious to one skilled in the art in view of these references. Allowance of claims 21-23 is therefore respectfully requested.

Claim 25 requires the sintered metal electrode and is an independent claim version of dependent claim 13. Claim 25 is novel and patentable for at least the reasons discussed above with respect to claim 13. Claim 29 is dependent on claim 25 and is allowable at least for the reasons discussed above with respect to claim 25. Claim 29 requires that both the center and outer electrode be formed of the sintered powder refractory material, thus optimizing the delivery of ionizable material to the pinch, something which is neither shown nor suggested in the parent references or otherwise in prior art known to the Applicant. Again, there would be no motivation to do this in a plasma gun radiation source application, even assuming that a sintered metal electrode existed for some other application in the prior art, something which Applicant is not currently aware of.

In view of the above arguments and amendments, all claims in this application should now be in condition for allowance and favorable action thereon is respectfully requested. Applicant's attorney would be pleased to discuss this application with the Examiner, should the Examiner believe that such a conversation would expedite prosecution.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to deposit account No. 23/2825.

Respectfully submitted,



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